WARNING

Because of possible shock or fire hazards, connection of this instrument should be performed in compliance with National Electrical Code (ANSI C1) and/or any other requirements which may be applicable to the user.

Installation, operation, and maintenance should be performed only by qualified personnel.

TM-110280-1U-1

VOLUME 1

OPERATOR'S MANUAL

626-PA-6007 EVENT MONITOR

Note: Refer to Volume 2 (Service Manual) of TM-110280-1U for maintenance data.

1 May 1984
(Rev. 1 Sept. 1985)
(Rev. 1 May 1986)
(Rev. 1 Sept. 1989)
(Rev. B)

© COPYRIGHT 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC., EDISON, NEW JERSEY.
ALL RIGHTS RESERVED.

HAWKER DRANETZ SIDDELEY

DRANETZ TECHNOLOGIES, INC.
1000 New Durham Road
Edison, New Jersey 08818

NOTICE REGARDING DRANETZ' PROPRIETARY RIGHTS

This publication contains information proprietary to Dranetz Technologies, Inc. By accepting and using this manual, the user agrees that the information contained herein will be used solely for the purpose of repairing or operating equipment of Dranetz Technologies, Inc. These manuals are to be returned to Dranetz Technologies, Inc. when no longer required by the user, or when there is a change in ownership of the equipment.

These publications are protected under the Copyright laws of the United States Title 17 et seq. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system or translated into any language or computer language, in any form, by any means, electronic, mechanical, magnetic, optical, chemical, manual, or otherwise, without the expressed written consent of Dranetz Technologies, Incorporated, 1000 New Durham Road, Edison, New Jersey 08818.

TABLE OF CONTENTS

626-PA-6007 EVENT MONITOR

VOLUME 1

Section			Page
I	GENERAL INFORMATION		
	1.1	Scope	1-1
	1.2	Introduction	1-1
	1.3	Purpose	1-1
	1.4	Equipment Characteristics	1-1
	1.5	Standard Accessories	1-2
	1.6	Optional Accessories	1-2
	1.7	Factory Repair	1-2
II	INSTALLATION AND OPERATION		
	2.1	Installation	2-1
	2.1.1	Load Ratings	2-1
	2.2	Connecting Input Channels	2-2
	2.2.1	Connection Procedure	2-2
	2.2.2	Circuit Applications	2-2
	2.3	Operating the 6007	2-3
	2.3.1	Operational Description	2-3
	2.3.2	Operating Controls and Indicators	2-4
	2.3.3	Programming Procedure	2-6
	2.4	Selecting the Factory/Option 101 Preset Program	2-9
	2.5	Description of Data Printouts	2-10
	2.6	Assembling Cables for 626-PA-6007	2-12
III.	OPERATIONAL TEST		
	3.1	General	3-1
	3.2	System Check	3-1

COPYRIGHT © 1981,1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

LIST OF ILLUSTRATIONS

Figure		Page
2-1	Series 626 Controls Used by the 6007 Plug-In	2-5
2-2A	Model 626 Sample Programming Printout	2-7
2-2B	Model 626A Sample Programming Printout. . . .	2-8

LIST OF TABLES

Table		Page
1-1	626-PA-6007 Technical Specifications.	1-2
2-1	6007 Operating Controls	2-6

COPYRIGHT © 1981,1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

IMPORTANT! CALIBRATION INTERVAL

The recommended calibration interval for this unit is once every 12 MONTHS.

We recommend that you return the unit to the factory for calibration. If you decide to do so, first contact the Dranetz Customer Service Department to obtain an authorization number.

Telephone Number:	(201) 287-3680
Telex Number:	499-7808
TWX Number:	(710) 997-9553
FAX Number:	(201) 248-9240
Cable:	DRANETZ

Then fill out the Repair/Service Order form enclosed in this manual and ship it along with the unit to the Dranetz Customer Service Department. (If this form is missing, ask the Dranetz Customer Service Department for a replacement.)

STATEMENT OF WARRANTY

ALL PRODUCTS OF DRANETZ TECHNOLOGIES, INC. ARE WARRANTED TO THE ORIGINAL PURCHASER AGAINST DEFECTIVE MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF DELIVERY. DRANETZ WILL REPAIR OR REPLACE, AT ITS OPTION, ALL DEFECTIVE EQUIPMENT RETURNED, FREIGHT PREPAID, DURING THE WARRANTY PERIOD, WITHOUT CHARGE FOR REPAIR, PROVIDED THERE IS NO EVIDENCE THAT THE EQUIPMENT HAS BEEN MISHANDLED OR ABUSED. THIS WARRANTY SHALL NOT APPLY TO ANY DEFECTS RESULTING FROM IMPROPER OR INADEQUATE MAINTENANCE, BUYER-SUPPLIED HARDWARE/SOFTWARE OR INTERFACING, UNAUTHORIZED MODIFICATION OR MISUSE OF THE EQUIPMENT, OPERATION OUTSIDE OF THE ENVIRONMENTAL SPECIFICATIONS FOR THE PRODUCT, OR IMPROPER SITE PREPARATION OR MAINTENANCE.

The information in this manual has been reviewed and is believed to be entirely reliable. No responsibility, however, is assumed for any inaccuracies. The material in this manual is for information purposes only, and is subject to change without notice.

VOLUME 1
OPERATOR'S MANUAL

626-PA-6007 EVENT MONITOR

SECTION I
GENERAL INFORMATION

1.1 SCOPE

This manual consists of two volumes. Volume 1, the Operator's manual, consists of three sections: I) GENERAL INFORMATION, II) INSTALLATION AND OPERATION, and III) OPERATIONAL TEST. Volume 2, the Service manual, contains the maintenance instructions (Sections IV thru VII).

1.2 INTRODUCTION

This manual provides operating instructions for the 626-PA-6007 Event Monitor Plug-in, hereinafter referred to as the 6007. The 6007 is designed for installation in the Series 626 Universal Disturbance Analyzer. It is assumed that the reader is familiar with the mainframe information presented in Volume 1 of the Series 626 Mainframe manual.

1.3 PURPOSE

The 6007 monitors the state of up to 8 inputs. It senses, identifies and records, in a convenient alphanumeric printout, rapid state changes of such inputs as electromechanical or solid-state relays with a response time of 1 millisecond. The 6007 provides highly accurate and reliable time sequence information, even from extremely noisy sources.

1.4 EQUIPMENT CHARACTERISTICS

The 6007 is configured as a plug-in module 6.5" high by 1.25" wide by 10" deep. It is designed for installation in any of the five slots of the Series 626 Universal Disturbance Analyzer. Technical specifications of the 6007 are listed in Table 1-1.

Table 1-1. 626-PA-6007 Technical Specifications

No. of Channels	8
Input	2 wire differential Z_{in} = 1 Megohm min (each side to ground)
Normal differential input for "high" input state	5-25 VDC
Common mode voltage	±200V DC max with respect to earth ground
Min. Validation Time	5 mSec, 10 mSec, 20 mSec, or 320 mSec (programmable)

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

1.5 STANDARD ACCESSORIES

Part No	Quantity	Description
TM-110280-1U, Vol. 1	1	Operator's Manual
AMP 1-350352-9	8	Pin Housing Connectors
AMP 640545-1	24	Pin Contacts
110289	1	Instruction Decal

1.6 OPTIONAL ACCESSORIES

Part No	Quantity	Description
TM-110280-1U, Vol. 2	1	Service (Maintenance) Manual

1.7 FACTORY REPAIR

When factory repair is required, proceed as follows:

1. Contact the Dranetz Customer Service Department in order to obtain an Authorization Number for factory repair.

   Telephone No: (201) 287-3680

   TWX: (710) 997-9553

   FAX: (201) 248-9240

   Telex: 499-7808

   Cable: DRANETZ

2. Fill out the REPAIR/SERVICE ORDER form enclosed in the Series 626 Operating manual. Ship it along with the malfunctioning equipment to the Dranetz Customer Service Department.

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

SECTION II
INSTALLATION AND OPERATION

2.1 INSTALLATION

To install the 6007 in the mainframe, proceed as follows:

CAUTION: Be sure that the 626 is turned off and that all power connected to all the plug-in modules is turned off.

a. Position the top and bottom front corners of the plug-in module in the upper and lower tracks at the desired slot position at the rear of the mainframe.

b. Carefully slide the module into the mainframe until it is firmly seated.

c. Tighten the top and bottom captive screws to secure the module to the mainframe.

2.1.1 Load Ratings

The Series 626 standard mainframe has an upper limit of the combined total rating of the installed modules. The overall mainframe capacity is set at 20 units, and individual modules have load ratings as follows:

Plug-in	Load Rating	Plug-in	Load Rating
626-PA-6001	2 Units	626-PA-60012A	3 Units
626-PA-6001 with Extra Option Board	3 Units	626-PA-6013	2 Units
626-PA-6002	2 Units	626-PA-6014	1 Unit
626-PA-6003	4 Units	626-PA-6015	4 Units
626-PA-6005	2 Units	626-PA-6018	4 Units
626-PA-6006	2 Units	626-PA-6020	4 Units
626-PA-6007	1 Unit	626-PA-6024A	4 Units
626-PA-6008	2 Units	626-PA-6024B	4 Units
626-PA-6009	4 Units	626-PA-6025	4 Units
626-PA-6011	1 Unit	626-PA-6030	6 Units
626-PA-6012	2 Units	626-PA-6037	1 Unit
		626-PA-6038	1 Unit
		626-PA-6040	6 Units

NOTE

When selecting modules for installation into any Series 626 Mainframe, verify that the sum of the load ratings of the installed modules DOES NOT exceed 20 Units.

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

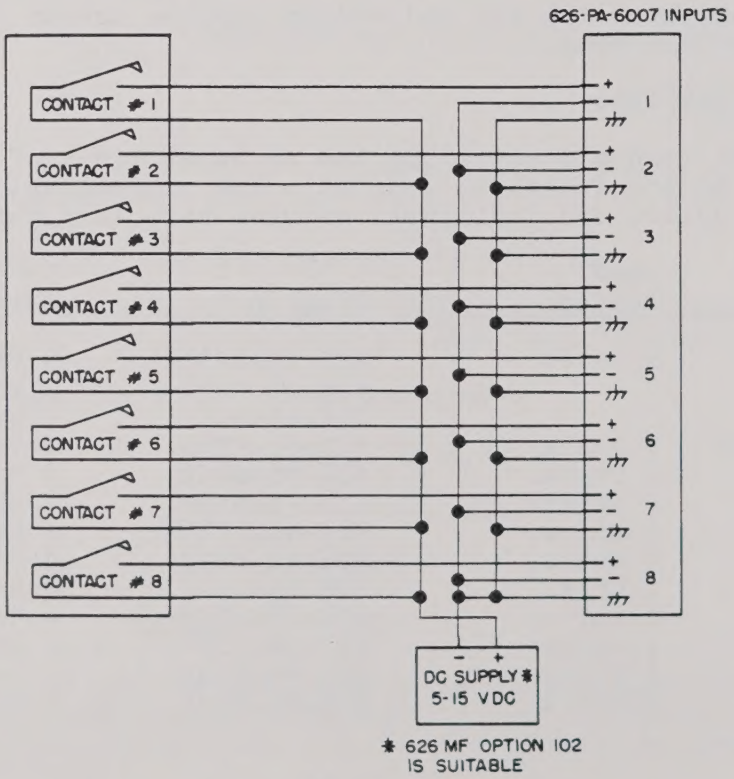
2.2 CONNECTING INPUT CHANNELS

2.2.1 Connection Procedure

The 6007 is equipped with eight 3-pin connectors installed at the rear of the module. The input leads must be wired to the mating connectors supplied with the module, observing the polarity as marked on the rear panel. Attach each wired mating connector to the corresponding (1-8) rear panel connector.

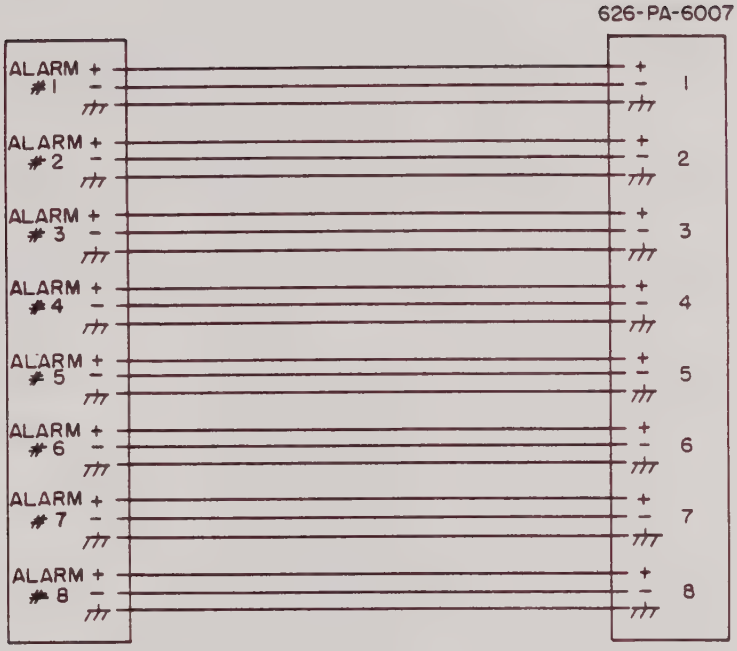
CAUTION: To avoid damaging the equipment, do not apply DC voltages in excess of 200V to the 6007.

2.2.2 Circuit Applications



Connection to Relay Contacts (Separate Contact Supply Required)

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.



Connection to Backplane Alarm Signals
(No Separate Contact Supply Required)

2.3 OPERATING THE 6007

2.3.1 Operational Description

The 6007 records and prints out any change of state of any of its eight inputs. Inputs can be programmed to be "normally closed" (or "high" or "on") or "normally open" (or "low or "off"), in accordance with the application. Minimum validation time is also program selectable to 5 mSec, 10 mSec, 20 mSec or 320 mSec. Both input state and validation parameters are stored in CMOS Random Access Memory so they are maintained when the 626 is turned off.

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

When any input changes state, the change data and alarm/normal status of all the inputs are stored. Depending on the printout mode selected, the channel number, input number, alarm/normal status and time of change are printed out. The number of transitions to the alarm state is also stored and printed out during the data summary (along with present state). If a memory overflow occurs, only the transition count is updated. The transition count is stored in the short term accumulator and is printed out when the overflow condition is cleared.

There are three input terminals: +, -, and GND. Since the maximum common mode voltage is +200V DC, maximum inputs from ground are as follows:

positive input = 200V DC, negative input = 197V DC; or
positive input = -197V DC, negative input = -200V DC

The inputs actually change state as follows:

ON = 2.30V DC max
OFF = 1.80V DC min
Hysteresis = 0.10V DC min

2.3.2 Operating Controls and Indicators

The functions of the mainframe operating controls and indicators associated with 6007 operation are described in Table 2-1. Figure 2-1 shows the typical front panel controls used by the 6007. For a description of controls common to overall Series 626 operation, refer to Volume 1 of the Mainframe manual.

Table 2-1. 6007 Operating Controls

Item	Function
F SENS pushbutton	Used in interactive program to change minimum validation time.
SENS pushbutton	Used in interactive program to change polarity of input state(s).
DATA pushbutton	When depressed, produces data summary printout.

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

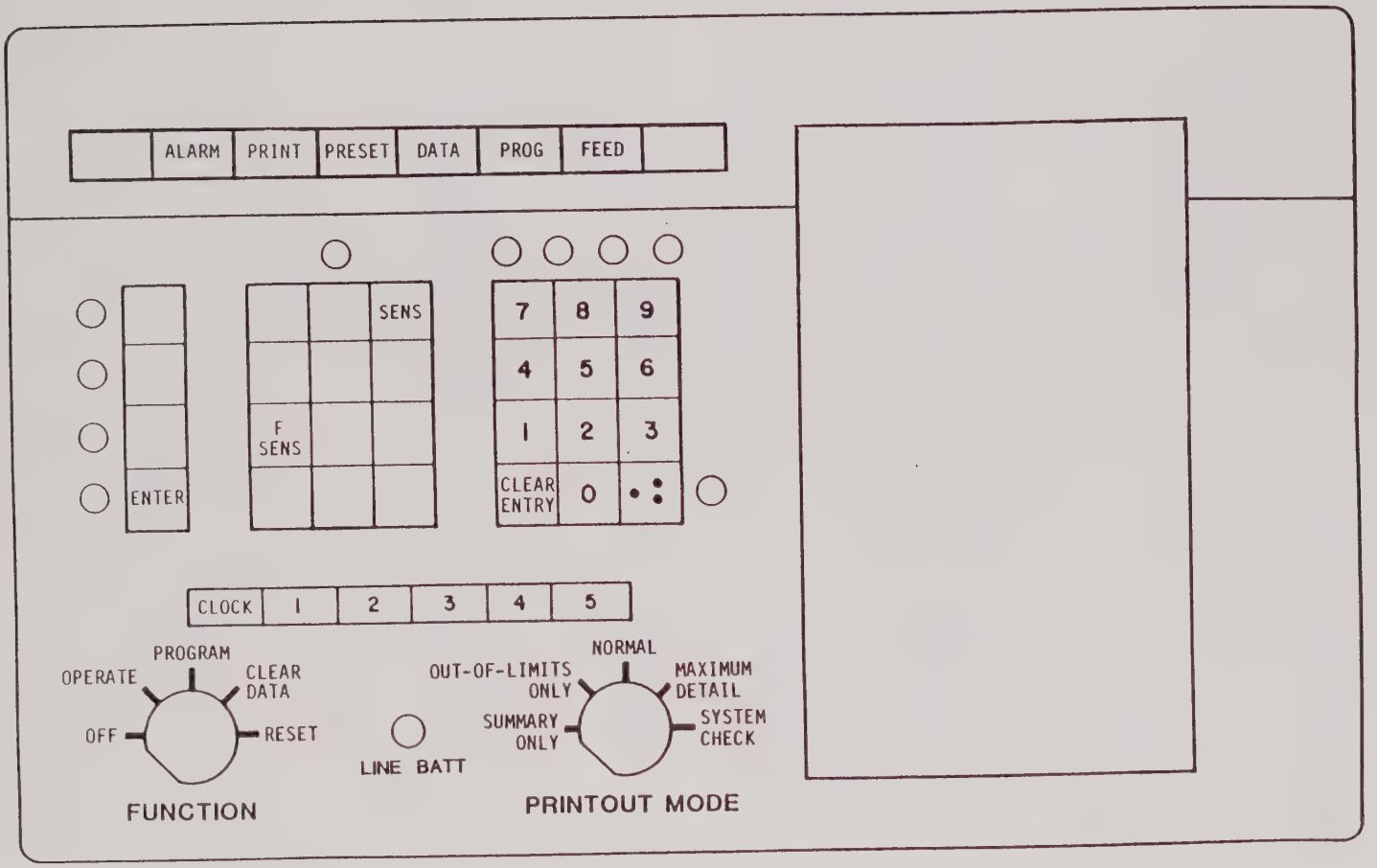


Figure 2-1. Series 626 Controls Used by the 6007 Plug-In

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

2.3.3 Programming Procedure

Assume it is desired to program the minimum validation time of the eight input channels of a 6007 to 10 mSec and the polarities (or states) of the eight inputs as follows:

Input Channel	1	2	3	4	5	6	7	8
Polarity	1	1	0	0	0	0	0	1

where 1 represents N/C or on and 0 is N/O or off

a. Set the FUNCTION switch to PROGRAM and depress the pushbutton (1-5) that corresponds to the slot position of the 6007 plug-in to be programmed. As shown in the sample printout of figure 2-2, note that a program summary is printed, followed by prompt message #1. In the summary, minimum validation time is shown as 5 mSec and the polarity of each channel is shown as 0. Prompt message #1 permits the operator to change any or all polarities or the minimum validation time.

b. To reprogram polarity, respond to prompt message #1 by pressing the SENS pushbutton. This causes prompt message #2 to be generated. Now press 1 1 0 0 0 0 0 1 to update the polarities of the eight inputs.

c. Note that a new summary is now generated, followed by prompt message #1. Polarity is updated, but minimum validation time has not changed.

d. To reprogram minimum validation time, press F SENS. Note that prompt message #3 is printed. To change the minimum time to 10 mSec, press "2". At this time, another summary is printed, indicating that both polarity and minimum time have been corrected. Another prompt message #1 is also generated, enabling further changes to be made, if so desired.

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

```
TO CHANGE POLARITY
PRESS: 'SENS'
TO CHANGE MIN TIME
PRESS: 'F SENS'

P  1  1  0  0  0  0  0  1
#  1  2  3  4  5  6  7  8

MIN TIME=010 MSEC

     626-PA-6007
4 FOR 320 MSEC
3 FOR 20 MSEC
2 FOR 10 MSEC
1 FOR 5 MSEC
PRESS

TO CHANGE POLARITY
PRESS: 'SENS'
TO CHANGE MIN TIME
PRESS: 'F SENS'

P  1  1  0  0  0  0  0  1
#  1  2  3  4  5  6  7  8

MIN TIME=005 MSEC

    626-PA-6007
0 FOR N/O OR OFF
1 FOR N/C OR ON
ENTER 8 DIGITS

TO CHANGE POLARITY
PRESS: 'SENS'
TO CHANGE MIN TIME
PRESS: 'F SENS'

P  0  0  0  0  0  0  0  0
#  1  2  3  4  5  6  7  8

MIN TIME=005 MSEC

    626-PA-6007
       CH 2
PROGRAM SUMMARY

  PROGRAM MODE
```

Prompt message #1

Program summary #3

Prompt message #3

Prompt message #1

Program summary #2

Prompt message #2

Prompt message #1

Program summary #1

Figure 2-2A. Model 626 Sample Programming Printout

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

```
 PROGRAM MODE

PROGRAM SUMMARY
      CH 2
   626-PA-6007

MIN TIME=0005 MSEC

#  1  2  3  4  5  6  7  8
P  0  0  0  0  0  0  0  0

PRESS: 'F SENS'
TO CHANGE MIN TIME
PRESS: 'SENS'
TO CHANGE POLARITY

ENTER 8 DIGITS
1 FOR N/C OR ON
0 FOR N/O OR OFF
   626-PA-6007

MIN TIME=005 MSEC

#  1  2  3  4  5  6  7  8
P  1  1  0  0  0  0  0  1

PRESS: 'F SENS'
TO CHANGE MIN TIME
PRESS 'SENS'
TO CHANGE POLARITY

PRESS
1 FOR 5 MSEC
2 FOR 10 MSEC
3 FOR 20 MSEC
4 FOR 320 MSEC
  626-PA-6007

MIN TIME=010 MSEC

#  1  2  3  4  5  6  7  8
P  1  1  0  0  0  0  0  1

PRESS: 'F SENS'
TO CHANGE MIN TIME
PRESS: 'SENS'
TO CHANGE POLARITY
```

Program Summary #1

Prompt Message #1

Prompt Message #2

Prompt Summary #2

Prompt Message #1

Prompt Message #3

Program Summary #3

Prompt Message #1

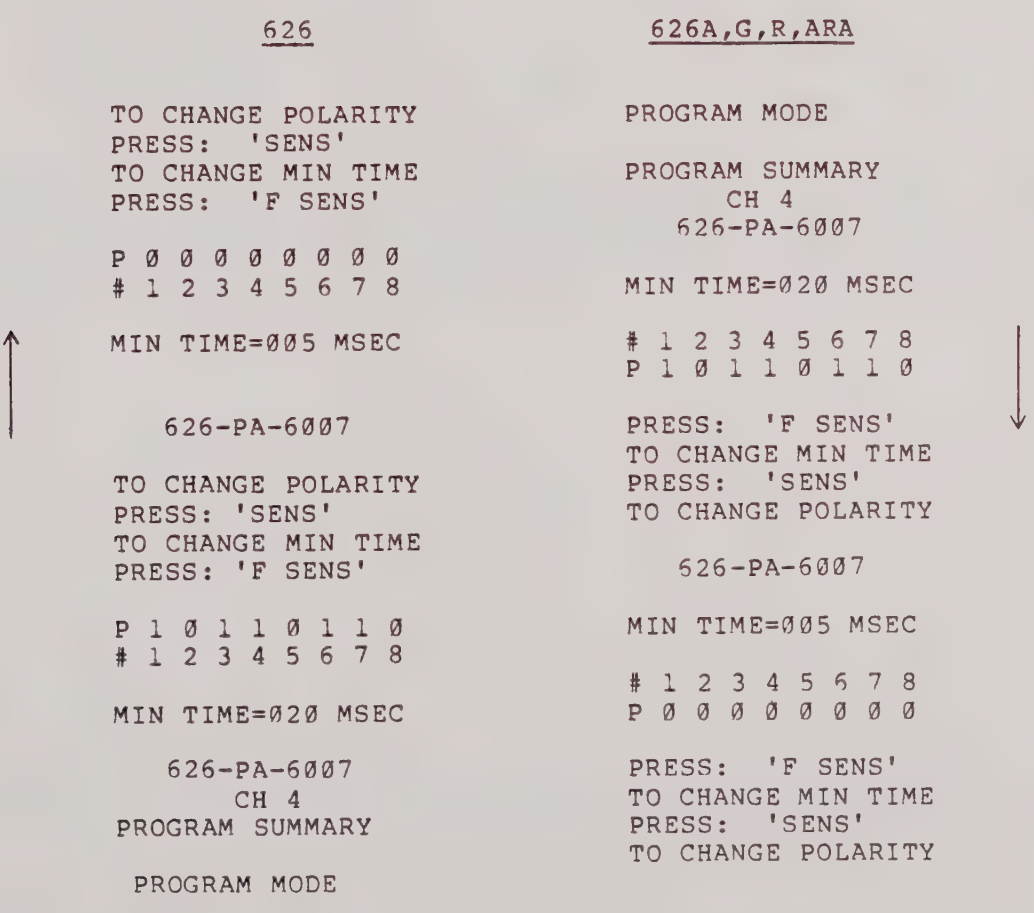
Figure 2-2B. Model 626A,G,R,ARA Sample Programming Printout

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

2.4 SELECTING THE FACTORY/OPTION 101 PRESET PROGRAM

NOTE: Custom Preset Option 101 allows the user to choose his/her own program for the PRESET function.

To select the program stored in non-volatile memory, set the FUNCTION switch to PROGRAM and depress the channel number desired. The last operator-set program will be printed out. Now depress the PRESET pushbutton to recall the factory-set program. Unless specially modified to customer requirements, the factory-set program for the 6007 is as follows:



COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

2.5 DESCRIPTION OF DATA PRINTOUTS

With the FUNCTION switch set to OPERATE, a change of state detected in any of the eight inputs to the 6007 produces a printout. A sample appears below:

626				626A,G,R,ARA			
2	#4	N	19:42:59.47	2	#3	A	19:42:49.56
2	#4	A	19:42:59.42	2	#3	N	19:42:53.28
2	#3	N	19:42:53.28	2	#4	A	19:42:59.42
2	#3	A	19:42:49.56	2	#4	N	19:42:59.47

Each line defines the channel number (2, in this case), the input number (3 or 4), the state of that input and the time of the change.

If the change state activity increases to such a rate that a memory overflow condition occurs, the 6007 initiates a summary mode printout when the overflow interval ends. This printout indicates, for the example below, that 44 alarm "hits" were detected in input No. 8 during the overflow period. Note that for this summary, only those inputs that change are printed.

626	626A,G,R,ARA
#8 0044 ALARM HIT	SUMMARY MODE
626-PA-6007	CH 2
CH 2	626-PA-6007
SUMMARY MODE	#8 0044 ALARM HIT

If the DATA pushbutton is depressed, a data summary is printed. For each input channel, the data summary indicates the number of transitions to the alarm state as well as the present state.

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

626

```
#8   A   0015   ALR   HIT
#7   N   0003   ALR   HIT
#6   N   0000   ALR   HIT
#5   N   0003   ALR   HIT
#4   N   0007   ALR   HIT
#3   N   0002   ALR   HIT
#2   A   0004   ALR   HIT
#1   A   0006   ALR   HIT

      626-PA-6007
          CH2

   10/17/83   19:40:07
      DATA SUMMARY
```

626A,G,R,ARA

```
      DATA SUMMARY
10/17/83   19:40:07

          CH2
      626-PA-6007

#1   A   0006   ALR   HIT
#2   A   0004   ALR   HIT
#3   N   0002   ALR   HIT
#4   N   0007   ALR   HIT
#5   N   0003   ALR   HIT
#6   N   0000   ALR   HIT
#7   N   0003   ALR   HIT
#8   A   0015   ALR   HIT
```

To obtain a program summary of the plug-ins in the Series 626, set the FUNCTION switch to OPERATE and depress the PROG pushbutton. The following program summary was obtained with a single 6007 module installed in slot position 2.

626

```
P  1  1  0  0  0  0  0  1
#  1  2  3  4  5  6  7  8

MIN  TIME=010 MSEC

      626-PA-6007
          CH 2

   10/17/83   19:40:40

      PROGRAM SUMMARY
```

626A,G,R,ARA

```
      PROGRAM SUMMARY

10/17/83    19:40:40

          CH 2
      626-PA-6007

MIN  TIME=010 MSEC

#  1  2  3  4  5  6  7  8
P  1  1  0  0  0  0  0  1
```

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

2.6 ASSEMBLING CABLES FOR 626-PA-6007

To attach the wires to the pins provided in the accessory bag for use with the 626-PA-6007, AMP tool #90325-1 is recommended. If this tool is not available, the following procedure may be used instead.

1) Take the three conductor twisted pair of red, green and black 24 AWG wires and untwist the 2 inches at one end.

2) Strip the insulation back 1/2" ±1/16" and tin the wires.

3) Insert the wire into the pin until 1/8" of insulation is touching the pin (so edge of insulation is even with the first (outer) set of tabs.) Bend these tabs tightly over the insulated wire, one at a time, with a needle-nose pliers.

4) Bend the inner tabs tightly over the stripped wire, one at a time, with a needle-nose pliers.

5) Apply a soldering iron to the inner tab. After heating for several seconds, apply a small amount of rosin core solder to the point of contact. Let flow for several seconds and remove soldering iron. Do not heat too long or the insulation may melt.

6) Repeat for the remaining 2 wires in the group.

7) When the pin has cooled, insert the pins into the connectors provided as follows, until a click is felt.

   a. Red wire into hole marked #1.
   b. Black wire into hole marked #2.
   c. Green wire into hole marked #3.

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

SECTION III
OPERATIONAL TEST

3.1 GENERAL

This section provides information for performing an operational test to verify that the 6007 plug-in is operating properly.

3.2 SYSTEM CHECK

When the PRINTOUT MODE switch is set to SYSTEM CHECK, board status is checked and a SYSTEM CHECK printout is produced. If the 6007 module is determined to be good, a SYSTEM CHECK printout such as the following is produced.

626	626A,G,R,ARA
**********	****SYSTEM CHECK****
BD OPERATIONAL 626-PA-6007 CH 1 10/17/83 19:42:08	10/17/83 19:42:08 CH 1 626-PA-6007 BD OPERATIONAL
****SYSTEM CHECK ****	**********

If an abnormal condition is detected, the line BD OPERATIONAL may be replaced by one of the following:

INTERRUPT ERROR
INPUT ERROR
DATA ERROR

SYSTEM CHECK cannot be activated if the 6007 is programmed to 320 mSec minimum validation time. Any error causes the board to be turned off until the error is corrected or unit is reset. The DATA SUMMARY will display "BD OFF" as well as the usual message. Note that the SYSTEM CHECK printout starts and ends with asterisks.

COPYRIGHT © 1981, 1982, 1983, 1984, 1985, 1986
BY DRANETZ TECHNOLOGIES, INC. ALL RIGHTS RESERVED.

9101 0172 5305 6172 2224 6230 5172 5305 6172 2224 6230 5172

MP MASTER
MA23098